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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,396	01/28/2004	Robert A. Erickson	K-2081	3342
27877	7590	10/06/2005	EXAMINER	
KENNAMETAL INC. P.O. BOX 231 1600 TECHNOLOGY WAY LATROBE, PA 15650			ADDISU, SARA	
			ART UNIT	PAPER NUMBER
			3722	

DATE MAILED: 10/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/766,396	<b>Applicant(s)</b> ERICKSON, ROBERT A.	
	<b>Examiner</b> Sara Addisu	<b>Art Unit</b> 3722	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 July 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments (page 7, lines 16-19) filed 7/12/05 have been fully considered and are persuasive.

Regarding claims 1, 5 and 9 of Applicant's argument (Page 7, paragraph 3, lines 3-8 and paragraph 6, lines 4 through page 8, lines 1-3), "Contrary to the Office Action that all of the elements of claims 1, 5 and 9 are disclosed in Yamazak, at least the feature of a cutting insert mounted to a toolholder and having a nose radius with a center RC, that is aligned with a centerline, LT, of the toolholder, is not disclosed", Applicant is referred to figure 4b of Yamazaki et al.'s invention ('782) which teaches a tool rest (tool holder) having an insert (23) with a nose that is aligned/lies on the same centerline as the tool holder (similar to figure 1 of the instant application). However, as mentioned in the Remarks, Yamazak fails to teach the insert having a nose radius (at the intersecting corners).

Regarding claim 5 of Applicant's argument (Page 8, lines 2-3) "In addition, there is no mention of Yamazaki of a tool spindle", Applicant is referred to ('782, Col. 2, lines 60-67), where Yamazaki teaches a tool holding portion (20a) is formed on the tool rest (20) with a turning tool (21) attached to it. The tool holding portion (20a) is provided as

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to freely fix and hold a tool in a predetermined holding state and to be freely driven to rotate (therefore has a spindle) in the direction as shown by the arrows I and J, which is the direction around the axial center CT2, and be positioned. However, please refer to the rejection below for further support using Katoh et al. (U.S. Pub. No. 2004/0003690) as prior art.

Regarding claims 2, 6 and 10 of Applicant's argument (Page 8, paragraph 4, lines 6-10) " On the other hand, there is no mention in Yamazaki of a tool holder mounted in a tool spindle that is designed to be inclined at an angle of 25 to 45 degrees away from the direction of cut with respect to a line perpendicular to the workpiece centerline with the center of its nose radius substantially located on the centerline of the tool spindle", Applicant is referred to ('782, Col. 2, lines 54-59), Yamazaki et al. teaches the centerline of the tool holder (20) being able to move freely in the B axis, indicated by G-H arrow in fig 1, therefore be aligned at a non-zero angle ( $\theta$ ) with respect to an axis, P, that is perpendicular to a longitudinal axis work piece (17). Furthermore, Yamazaki et al. teaches machining program (PRO) being used to decide the degree of the B-axis angle (i.e. non-zero angle) ('782, Col. 4, lines 60-63), which reads on the limitation 25-45 degrees as claimed in claims 2, 6 and 10.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4, 9, 12, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al. (U.S. Patent No. 6,453,782), in view of Aebi et al. (U.S. Patent No. 4,940,369).

Yamazaki et al. teaches a tool rest (tool holder) (20) having an insert (22) that is aligned/lies on the same centerline as the tool and rotational axis (CT2) while also being aligned in a direction away from the direction of cutting of the workpiece (see Figures 1 and 4b). Yamazaki et al. also teaches the centerline of the tool holder (20) being able to move freely in the B axis, indicated by G-H arrow in fig 1 (Col. 2, lines 54-59), therefore be aligned at a non-zero angle ( $\theta$ ) with respect to an axis, P, that is perpendicular to a longitudinal axis work piece (17) (see diagram below). Furthermore, Yamazaki et al. teaches machining program (PRO) being used to decide the degree of the B-axis angle (i.e. non-zero angle) (Col. 4, lines 60-63). Additionally, Yamazaki teaches a tool holding portion (20a) is formed on the tool rest (20) with a turning tool (21) attached to it. The tool holding portion (20a) is provided as to freely fix and hold a tool in a predetermined holding state and to be freely driven to rotate (therefore has a tool spindle rotatably

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mounted to a spindle housing) in the direction as shown by the arrows I and J, which is the direction around the axial center CT2, and be positioned ('782, Col. 2, lines 60-67).

However, Yamazaki et al. is silent as to lozenge insert (23) ('782, figure 4b) having a nose radius.

Aebi et al. teaches a cutting tool having a lozenge insert having a corner configuration of a nose radius ('369, Figures 8A & 8B and Col. 3, lines 3-11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Yamazaki et al.'s invention such that the lozenge insert used has a corner radius, as taught by Aebi et al. to achieve a different cutting operation because a lozenge insert does not always limit it to an insert having sharp corners as shown in ('782, figure 4b). Furthermore, Yamazaki et al. teaches the lozenge cutting tool for screw cutting (21B) being among the plurality of tools (21) to be installed on the tool rest (20) having a main body (21a) and a lozenge insert (23) installed on the tip of the main body (21a) ('782, Col. 3, lines 6-11).

The diagram illustrates a control system for a machine tool, specifically focusing on tool rest control. The system is organized into several functional blocks:

- Main Control Portion (2)**: The central control unit, connected to the Keyboard (5), System Program Memory (8), Machining Program Memory (9), Spindle Control Portion (10), Tool Rest Control Portion (11), and Display (12).
- Input/Output and Program Memory**:
  - Keyboard (5)**: Provides input to the Main Control Portion.
  - System Program Memory (8)**: Connected to the Main Control Portion via **PAT1** and **PAT2** lines.
  - Machining Program Memory (9)**: Connected to the Main Control Portion via a **PRO** line.
- Tool File (7)**: A data storage component connected to the Main Control Portion and the Cutting Pattern Computing Portion (6).
- Control and Motor Drives**:
  - Cutting Pattern Computing Portion (6)**: Receives data from the Tool File and outputs to the Spindle Driving Motor (13).
  - Spindle Control Portion (10)**: Receives signals from the Main Control Portion and the Spindle Driving Motor (13).
  - Tool Rest Control Portion (11)**: Receives signals from the Main Control Portion and controls the Tool Rest Driving Motor (19).
- Display (12)**: Provides visual feedback, connected to the Main Control Portion.
- Machine Tool Structure**:
  - Spindle Driving Motor (13)**: Drives the spindle assembly (18).
  - Spindle Assembly (18)**: Includes components like **CT** (16), **CT2** (17), and **D1** (18a).
  - Tool Rest Driving Motor (19)**: Drives the tool rest assembly (20).
  - Tool Rest Assembly (20)**: Includes components like **G**, **B**, **H**, **20a**, **21a**, and **J**.
  - Workpiece (P)**: The part being machined, positioned relative to the tool rest.
  - Coordinate Systems**: The diagram shows a vertical axis with **C** (up) and **D** (down) directions, and a horizontal axis with **A**, **B**, and **Z** directions. Another set of axes shows **E** (up) and **F** (down) directions, and **X** and **Y** directions.

Claims 5, 8, 13, 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al. (U.S. Patent No. 6,453,782), in view of Aebi et al. (U.S. Patent No. 4,940,369) and further in view of Katoh et al. (U.S. Pub. No. 2004/0003690).

The modified device of Yamazaki et al. teaches a tool rest (tool holder) (20) having an insert (22) with a nose radius that is aligned with the centerline of the toolholder, as set forth in the above rejection.

However, the modified device of Yamazaki et al. fails to disclose expressly the presence of a spindle.

Although, Yamazaki et al. fails to disclose expressly the presence of a spindle, Yamazaki et al. teaches a tool holding portion (20a) being provided as to freely fix and hold a tool in a predetermined holding state and to be freely driven to rotate (therefore has a tool spindle rotatably mounted to a spindle housing) in the direction as shown by the arrows I and J, which is the direction around the axial center CT2 ('782, Col. 2, lines 60-67). The use of spindle to rotate a tool holder is evidenced by Katoh et al. (U.S. Pub. No. 2004/0003690), which teaches turret body being provided with a tool spindle for detachably attaching a complex tool so as to be freely rotated with an axial center as its center. The turret body is provided with indexing means for indexing the tool spindle, and clamping means for clamping the tool spindle at an indexed position indexed by the indexing means. The turret body has a function for indexing the tool spindle for attaching the complex tool thereto and a function for clamping, thereby using the complex tool in a turret lathe (2004/0003690, abstract and figure 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate a spindle to rotate the tool as evidenced by Katoh et al. (U.S. Pub. No. 2004/0003690).



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Claims 2, 3, 6, 7, 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al. (U.S. Patent No. 6,453,782).

Yamazaki et al. teaches a tool as set forth in the above rejection.

Yamazaki et al. fails to specify the non-zero angle to be in the range of 25-45 degrees. Yamazaki et al. also fails to tool length of 80-120mm.

Regarding claims 2, 6 and 10, although, Yamazaki et al.'s teaching does not recite the specific range, Yamazaki et al. teaches a machining program (PRO) being used to decide the degree of the B-axis angle in fig 1 (Col. 4, lines 60-63).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize a computer program to rotate the tool holder at an appropriate optimize angle (25-45 degrees) since such a modification would have allowed a greater flexibility of cut.

Regarding claims 3, 7 and 11, Yamazaki et al. discloses the claimed invention except for the tool length size being in the tool length range of 80-120mm. It would have been an obvious matter of design choice to a person of ordinary skill in the art to select a length of the tool length based on the tool application because Yamazaki et al.'s teaches a plurality of turning tools (21) being installed on the tool rest (20) having a main body (21a). Furthermore, Applicant teaches on Page 6, lines 1-5, "by inclining or tilting the toolholder spindle 106 at 45 degrees for example, with respect to the axis, P, and also the longitudinal axis, LW, of the workpiece 120), the tool length, L, can be shortened". This is equally supported by the fact that Yamazaki et al.'s invention allows

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for tilting/inclining the tool holder { Yamazaki et al. teaches the centerline of the tool holder (20) being able to move freely in the B axis, indicated by G-H arrow in fig 1, therefore be aligned at a non-zero angle ( $\theta$ ) with respect to an axis, P, that is perpendicular to a longitudinal axis work piece (17). Furthermore, Yamazaki et al. teaches machining program (PRO) being used to decide the degree of the B-axis angle (i.e. non-zero angle) ('782, Col. 4, lines 60-63)}.

### **Conclusion**

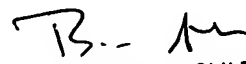
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sara Addisu at (571) 272-6082. The examiner can normally be reached on 8:30 am - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Boyer Ashley can be reached on (571) 272-4502. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sara Addisu  
(571)272-6082

SA  
10/21/05

  
BOYER D. ASHLEY  
PRIMARY EXAMINER